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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,534	08/25/2003	Masato Ueda	47539.27	4653
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Cameron K. Kerrigan		EXAMINER		
Squire, Sanders & Dempsey L.L.P.		MRUK, GEOFFREY S		
Suite 300		ART UNIT		
1 Maritime Plaza		2853		
San Francisco, CA 94111		PAPER NUMBER		

DATE MAILED: 09/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,534

Applicant(s)

UEDA, MASATO

Examiner

Geoffrey Mruk

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

Figure 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

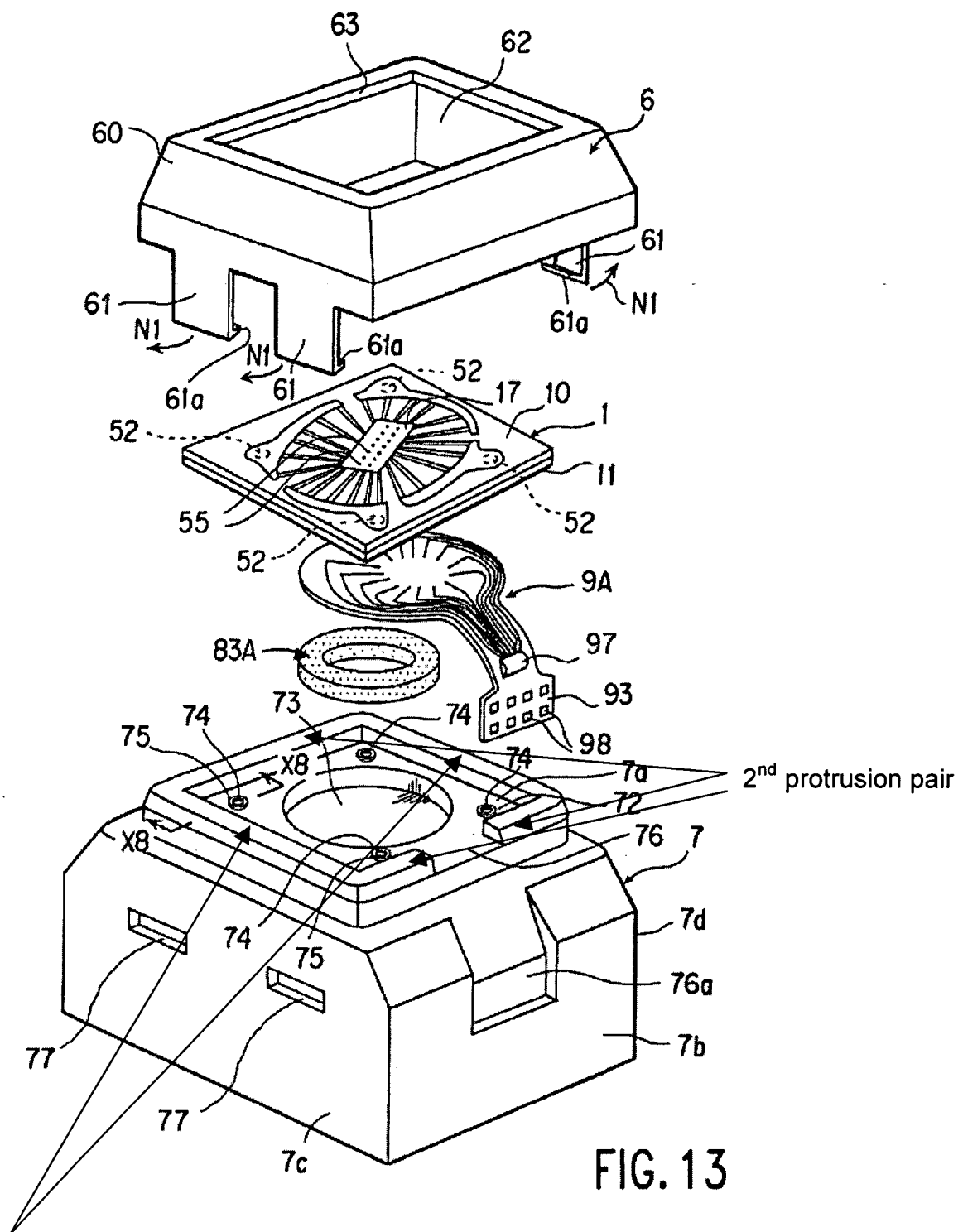
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 11-22, and 25-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Amano (US 6,027,208).

With respect to claim 1, Amano discloses an ink jet head (Column 2, line 11) comprising:

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- a plate shaped nozzle chip (Fig. 13, element 1) comprising a front end surface (Fig. 13, element 10) in which a plurality of nozzles (Fig. 13, element 55) for jetting ink are provided,
- a back end surface (Fig. 13, element 11) opposed to the front end surface, and four side surfaces adjacent to the back end surface (Fig. 13, i.e. 4 sides making the remaining surfaces of the head body element 1); and
- a frame shape member (Fig. 13, element 7) to position and mount the nozzle chip thereon including:
 - a first protrusion pair which abuts on one pair of facing sides of the four side surfaces to sandwich the nozzle chip (Fig. 13 below), and
 - a second protrusion pair which abuts on the other pair of facing sides of the four side surfaces to sandwich the nozzle chip (Fig. 13 below).



1st protrusion pair

With respect to claim 2, Amano discloses the nozzle chip (Fig. 13, element 1) comprises an electrode terminal (Fig. 13, element 9A) on a central portion of the one pair of facing sides (Fig. 13, element 11), and the first protrusion pair abuts on a portion of the one pair of facing sides on which no electrode terminal is provided to sandwich the nozzle chip.

With respect to claim 3, Amano discloses the frame shape member (Fig. 13, element 7) comprises an abutment portion (Fig. 13, element 76) on which the back end surface of the nozzle chip (Fig. 13, element 1) abuts.

With respect to claim 4, Amano discloses the frame shape member (Fig. 13, element 7) comprises a first protrusion member (Fig. 13 above) and a second protrusion member (Fig. 13 above) on inner walls of both ends of the frame shape member, respectively, so as to face each other, the first protrusion member comprising the first protrusion pair and one protrusion of the second protrusion pair, the second protrusion member comprising the first protrusion pair and the other protrusion of the second protrusion pair (Fig. 13 above).

With respect to claim 5, Amano discloses each of the first protrusion member and the second protrusion member further comprises an abutment portion on which the back end surface of the nozzle chip abuts (Fig. 13 above).

With respect to claim 6, Amano discloses the first protrusion pair is arranged on the abutment portion perpendicularly (Fig. 13 above).

With respect to claim 7, Amano discloses the second protrusion pair is arranged on the abutment portion perpendicularly (Fig. 13 above).

With respect to claim 8, Amano discloses the frame shape member (Fig. 13, element 7) is made of at least one selected from aluminum, resin, magnesium and silver (Column 11, lines 14-16).

With respect to claim 11, Amano discloses the nozzle chip (Fig. 13, element 1) has a thin plate shape.

With respect to claim 12, Amano discloses the back end surface of the nozzle chip (Fig. 13, element 1) has a uniform width.

With respect to claim 13, Amano discloses a width of the back end surface (Fig. 4, element 46) of the nozzle tip (Figs. 1 and 4, element 1) is smaller than a width of the front end surface (Fig. 1, element 10).

With respect to claim 14, Amano discloses a piezoelectric element of shear mode type is built in the ink jet head (Column 7, lines 16-35).

With respect to claim 15, Amano discloses an ink jet printer comprising (Column 1, lines 6-9): an ink jet head (Column 2, line 11) which comprises:

- a plate shaped nozzle chip (Fig. 13, element 1) including a front end surface (Fig. 13, element 10) in which a plurality of nozzles (Fig. 13, element 55) for jetting ink is provided,
- a back end surface opposed to the front end surface and four side surfaces adjacent to the back end surface, and
- a frame shape member (Fig. 13, element 7) including
- a first protrusion pair which abuts on one pair of facing sides of the four side surfaces to sandwich the nozzle chip (Fig. 13 above) and

- a second protrusion pair which abuts on the other pair of facing sides of the four side surfaces to sandwich the nozzle chip, for positioning mounting the nozzle chip (Fig. 13 above); and
- a carriage on which the ink jet head is mounted in a state pre-positioned.

Although Amano does not explicitly disclose a carriage, a carriage would necessarily be present and is known in the inkjet art, in order to print an image on a recording medium.

With respect to claim 16, Amano discloses the nozzle chip (Fig. 13, element 1) comprises an electrode terminal (Fig. 13, element 9A) on a central portion of the one pair of facing sides (Fig. 13, element 11) , and the first protrusion pair abuts on a portion of the one pair of facing side on which no electrode terminal is provided to sandwich the nozzle chip.

With respect to claim 17, Amano discloses the frame shape member (Fig. 13, element 7) comprises an abutment portion (fig. 13, element 76) on which the back end surface of the nozzle chip (Fig. 13, element 1) abuts.

With respect to claim 18, Amano discloses the frame shape member (Fig. 13, element 7) comprises a first protrusion member (Fig. 13 above) and a second protrusion member (Fig. 13 above) on inner walls of both ends of the frame shape member, respectively, so as to face each other, the first protrusion member comprising the first protrusion pair and one protrusion of the second protrusion pair, the second protrusion member comprising the first protrusion pair and the other protrusion of the second protrusion pair (Fig. 13 above).

With respect to claim 19, Amano discloses each of the first protrusion member and the second protrusion member further comprises an abutment portion on which the back end surface of the nozzle chip abuts (Fig. 13 above).

With respect to claim 20, Amano discloses the first protrusion pair is arranged on the abutment portion perpendicularly (Fig. 13 above).

With respect to claim 21, Amano discloses the second protrusion pair is arranged on the abutment portion perpendicularly (Fig. 13 above).

With respect to claim 22, Amano discloses the frame shape member (Fig. 13, element 7) is made of at least one selected from aluminum, resin, magnesium and silver (Column 11, lines 14-16).

With respect to claim 25, Amano discloses the nozzle chip (Fig. 13, element 1) has a thin plate shape.

With respect to claim 26, Amano discloses the back end surface of the nozzle chip (Fig. 13, element 1) has a uniform width.

With respect to claim 27, Amano discloses a width of the back end surface (Fig. 4, element 46) of the nozzle tip (Figs. 1 and 4, element 1) is smaller than a width of the front end surface (Fig. 1, element 10).

With respect to claim 28, Amano discloses a piezoelectric element of shear mode type is built in the ink jet head (Column 7, lines 16-35).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 10, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano (US 6,027,208) in view of Ishii et al. (US 5,804,083).

Amano discloses the ink jet head (Column 2, line 11) and printer (Column 1, lines 6-9), wherein the first protrusion pair (Fig. 13 above) and the second protrusion pair (Fig. 13 above) are formed by cutting process (Column 11, lines 53-56).

However Amano fails to disclose the frame shape member (Fig. 13, element 7) is formed as one body by die-casting.

Ishii discloses a method of forming a microstructure where "In FIG. 11C and 12C, a cavity plate 212 and then a casting mold 211 are layered around the reference guide pin 202, and the two-component resin 206 is again poured for a second molding to form a molded resin piece 213. Then, as shown in FIG. 11D and FIG. 12D, after removal of the casting mold 211 and the cavity plate 212, the frame 210 is fixed, and an additional temporary layer 209 is poured to flatten the surface. Thereafter, as shown in FIG. 11E and FIG. 12E, a cavity plate 215 and then a casting mold 214 are layered, the two-component resin 206 is again poured, and then, if necessary, a further temporary layer 209 is formed" (Column 2, lines 3-13).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to combine the teachings of Ishii in the ink jet print head of Amano. The motivation for doing so would have been to miniaturize mechanical structures (Column 1, lines 16-25).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Baitz et al. (US 6,623,100 B1) discloses a printer with two printing stations where an adapter is used to attach a printing head to a carriage (Fig. 3).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is 571 272-2810. The examiner can normally be reached on 7am - 330pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM
9/20/2005

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 9/21/05
MANISH S. SHAH
PRIMARY EXAMINER